

ORGANIC FOOD. CHOICE FACTORS AND CONSUMER AWARENESS

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In the study we analysed the impact of the factors related to consumer, product and environment on the purchase and frequency of organic food consumption. The research was carried out among 770 consumers from the province of Warmia-Mazury. A personal interview was used as an exploratory technique. Statistical analysis of the collected data was completed with Statistica 7.1, χ^2 test (level $p=0.05$) and τ - Kendall correlation ratio.

The respondents defined organic food properly. It was revealed that for women and those with higher education, the press was a more significant source of knowledge ($p<0.05$) of organic products. The main determinants of choice of organic food were health aspects. Gender and age did not have a significant impact on the ranking of the importance of factors determining the purchase of such products. Nearly 83% of all respondents claimed they bought organic products, however, a great number of them failed to note the frequency of purchases. It was ascertained that age and education significantly impact the frequency of consumption. The research shows that respondents indicate a low level of knowledge of the organic food labeling rules.

INTRODUCTION

The attitude of consumers to perceiving organic food has changed over time. The behaviour of today's consumer is more often connected with environmental issues and health. This is a reason why consumers are more interested in safe, high quality food [Davies *et al.*, 1995; Bołtromiuk, 1999; Aarset *et al.*, 2004; Tarkiainen & Sundqvist, 2005]. Products obtained from farms and plants which are under ecological certification are a guarantee of such products. The market of ecological food is growing in Europe, United States and Japan. However, Japan, China, USA, Canada and Mexico are less developed markets according to recently established organic standards [Lohr, 2001].

The purpose of the present work was to analyse the impact of factors related to consumer, product and environment on the motivation of consumers in buying the organic food as well as the and frequency of consumption.

MATERIAL AND METHODS

The study was carried in 2005 and 2006 among 770 consumers from the province of Warmia-Mazury. A personal interview was used as an exploratory technique. The questionnaire (Table 1) contained opened and closed questions. Issues connected with organic food (level of education, purchasing determinants, place of purchase and labeling) and socio-demographic factors were included. Results of previous initial poll studies and surveys of other authors [Ozimek, 1996; Żakowska-Biemans, 2000] formed the basis of the questionnaire. According to

Babicz-Zielińska [2006] the factors analysed were classified as the factors related to: (a) a product (taste, smell, wholesomeness, package, producer), (b) consumer (age, general, education level) and (c) environment (advertisement, price, income, the environmental concern, chance).

The collected data was analysed with Statistica 7.1. A χ^2 test was used to examine the differences between studied features. Assessment of the similarity of ranging the significance of purchasing factors was estimated with a τ - Kendall correlation ratio.





RESULTS AND DISCUSSION

Most of the respondents (92%) defined organic food properly; almost 87% claimed that the absence of chemical additives is the most important aspect. In Polish studies [Pachotek *et al.*, 1996; Żakowska-Biemans & Gutkowska, 2003; Lisińska-Kuśnierz & Ucherek, 2005; Dziedzic, 2006] and foreign studies [Lohr, 2001; Harper, 2002; Millock, 2004; Lea & Worsley, 2005; Radman, 2005] it has been found that consumers are aware of methods of ecological production. Television (61%) and press (56%) were indicated by respondents as the main source of organic food information. For women and those with higher education, the press was a more significant source of knowledge ($p<0.05$) of organic products.

Tables 2, 3 and 4 present the ranking of factors determining the purchase of organic food depending on gender, education and age of respondents. A 5-point scale was used to estimate each factor. The research revealed that the highest rank ($R=1$) was for health aspects (excluding respondents with primary

TABLE 1. Questionnaire – personal interview.

1. What is the meaning of the term “organic food”?	
2. Do you consume organic food?	
<input type="checkbox"/> <i>yes</i> <input type="checkbox"/> <i>no</i>	
3. How often do you consume organic food?	
<input type="checkbox"/> <i>everyday, or, almost everyday</i> <input type="checkbox"/> <i>four-five times a week</i> <input type="checkbox"/> <i>twice or three times a week</i> <input type="checkbox"/> <i>once a week</i> <input type="checkbox"/> <i>every two weeks</i> <input type="checkbox"/> <i>less than every two weeks</i> <input type="checkbox"/> <i>I don't pay attention, maybe I do</i>	
4. What do you think is the most important aspect of organic food? - Choose one.	
<input type="checkbox"/> <i>food is produced at organic farms without the use of chemicals and it's origin has been certified organic.</i> <input type="checkbox"/> <i>so-called „health food”</i> <input type="checkbox"/> <i>highly flavorful food</i> <input type="checkbox"/> <i>highly nutritious food</i> <input type="checkbox"/> <i>visually appealing</i> <input type="checkbox"/> <i>other (what?)</i>	
5. How did you heard about organic food? - Choose more than one answer.	
<input type="checkbox"/> <i>newspapers, magazines</i> <input type="checkbox"/> <i>radio</i> <input type="checkbox"/> <i>television</i> <input type="checkbox"/> <i>commercials</i> <input type="checkbox"/> <i>from friends/family</i> <input type="checkbox"/> <i>from the packages</i> <input type="checkbox"/> <i>accidentally</i> <input type="checkbox"/> <i>I haven't heard about it</i> <input type="checkbox"/> <i>other (how?)</i>	
6. Where do you buy organic food? - Choose more than one answer.	
<input type="checkbox"/> <i>grocery store</i> <input type="checkbox"/> <i>supermarket</i> <input type="checkbox"/> <i>health food stores</i> <input type="checkbox"/> <i>farmer's markets</i> <input type="checkbox"/> <i>organic farms</i> <input type="checkbox"/> <i>other (where?)</i>	
7. What do you take into consideration while purchasing organic products? Please answer on a scale 1 to 5, where:	
1 - I don't take into consideration; 2 - I take into consideration to a small extent; 3 - neutral/ I don't know; 4 - I take it into consideration to a medium extent; 5 - I take into consideration to a large extent.	
<i>Healthy</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Smell and taste</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Environmental aspects</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Advertisements</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Price</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Brand</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Package</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
<i>Incident</i>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>

8. Do you know the meaning of those signs?			
1- I know very well; 2- I have seen it, but don't know what it means; 3- I don't know			
Fig. 1	Fig. 2	Fig. 3	Fig. 4
			
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>
9. Personal Data:			
9.1. Gender: <i>Male Female</i>			
9.2. Age range: <i>16-29 30-59 over 60</i>			
9.3. Place of residence:			
<input type="checkbox"/> <i>village</i>			
<input type="checkbox"/> <i>town</i>			
<input type="checkbox"/> <i>city</i>			
9.4. Educational background:			
<input type="checkbox"/> <i>Primary</i>			
<input type="checkbox"/> <i>Vocational</i>			
<input type="checkbox"/> <i>Secondary in progress</i>			
<input type="checkbox"/> <i>Secondary</i>			
<input type="checkbox"/> <i>Higher in progress</i>			
<input type="checkbox"/> <i>Higher</i>			
9.5. Total household income:			
<input type="checkbox"/> <i>under 600 PLN</i>			
<input type="checkbox"/> <i>601-1000 PLN</i>			
<input type="checkbox"/> <i>1001-3000 PLN</i>			
<input type="checkbox"/> <i>over-3000 PLN</i>			

education). The collation of the ranking of analysed factors did not find any differences between gender (Table 2) and age (Table 4). Significant differences were noted concerning education (Table 3). Subjects with primary education claimed that taste and smell preferences were the most important while purchasing organic food. The collation of distribution of analysed factors concerning gender (Table 2) found significant differences ($p < 0.05$) including the aspects: health issues, advertisements and incident. Women more often claimed to take health aspects under consideration while purchasing. This explains the superiority of the average importance of this factor (4.49 ± 1) compared with men (4.20 ± 1.20). However, men significantly more often indicated the environmental factors such as advertisement and incident. Respondents with vocational education (Table 3) give more consideration to the brand of organic products as a factor motivating the purchase of such products than others. Comparing respondents aged 30-59 (3.57 ± 1.25), 16-29 (3.29 ± 1.28) and also respondents aged 60 and more (Table 4), those above age 60 significantly more often admitted taking environmental issues into account (3.89 ± 1.20). The studies of Slovenian [Kuhar & Juvancic, 2006], Irish [Davies *et al.*, 1995], Danish [Squires *et al.*, 2001; Millock, 2004], Croatian [Radman, 2005] and Ital-

ian [Gambelli *et al.*, 2004] authors show that health issues are the most important aspect.

Nearly 83% of the respondents claimed to purchase organic products. Markets (40%), supermarkets (27%) and stores with organic products (27%) were indicated as a place of purchase. However, only 20% of the respondents were aware of ecological labeling. There is a problem of awareness of the distinguishing of such products on the market. It can be assumed that some respondents who claim to purchase organic food buy conventional products. Access to professional information concerning labeling is not only a problem in the Polish society. Greek [Fotopoulos & Krystallis, 2002] authors claim that consumers have a problem with distinguishing conventional and organic food, which could be a result of a lack of advertising campaigns. In studies by other authors [Zychlińska *et al.*, 2004; Radman, 2005], the number of consumers claiming to purchase organic food was also high.

The frequency of the consumption of organic food was significant ($p < 0.05$) depending on the age (Figure 1) and education (Figure 2) of the respondents. The income did not significantly impact the frequency of consumption (Figure 3). About 8% of respondents aged 16-29 (Figure 1) claimed to consume organic food everyday, while most of them (25%)

TABLE 2. Importance of factors influencing the purchase of organic products concerning gender.

Factors	Total			Gender						Collation of distribution
	N=770			Women			Men			
	\bar{x}	SD	R	\bar{x}	SD	R	\bar{x}	SD	R	test χ^2
Health aspects	4.39	1.08	1	4.49	1.00	1	4.20	1.20	1	p=0.001
Taste and smell	4.20	1.00	2	4.23	1.01	2	4.15	0.98	2	p=0.115
Environmental aspects	3.42	1.27	4	3.42	1.25	4	3.42	1.32	4	p=0.400
Advertisements	2.51	1.21	7	2.44	1.18	7	2.62	1.27	7	p=0.008
Price	3.78	1.24	3	3.81	1.25	3	3.72	1.24	3	p=0.278
Brand	2.88	1.29	6	2.83	1.30	6	2.97	1.27	6	p=0.450
Package	2.71	1.22	5	2.67	1.21	5	2.78	1.24	5	p=0.150
Incident	2.43	1.32	8	2.35	1.30	8	2.57	1.34	8	p=0.027

\bar{x} – mean value, SD – standard deviation, R - rank

TABLE 3. Importance of factors influencing the purchase of organic products concerning education.

Factors	Education											Collation of distribution	
	Primary			Vocational			Secondary			Higher			
	\bar{x}	SD	R	\bar{x}	SD	R	\bar{x}	SD	R	\bar{x}	SD	R	test χ^2
Health aspects	4.38	1.33	2	4.42	1.05	1	4.28	1.18	1	4.43	1.03	1	p=0.291
Taste and smell	4.46	0.90	1	4.23	0.96	3	4.20	1.06	2	4.18	0.98	2	p=0.263
Environmental aspects	3.38	1.36	3	3.52	1.37	4	3.47	1.29	4	3.38	1.25	4	p=0.601
Advertisements	2.15	1.32	8	2.56	1.39	8	2.43	1.37	8	2.42	1.29	8	p=0.430
Price	2.38	1.20	7	2.89	1.45	5	2.53	1.27	7	2.45	1.15	7	p=0.009
Brand	3.27	1.61	4	4.27	1.09	2	3.88	1.25	3	3.69	1.22	3	p=0.001
Package	3.00	1.44	5	2.81	1.33	7	2.97	1.34	5	2.84	1.26	5	p=0.361
Incident	2.81	1.39	6	2.81	1.46	6	2.66	1.29	6	2.71	1.15	6	p=0.001
In the same order	τ -Kendalla (0.6-0.8)						p < 0.01						

\bar{x} – mean value, SD – standard deviation, R - rank

TABLE 4. Importance of factors influencing the purchase of organic products concerning age.

Factors	Age									Collation of distribution
	16-29			30-59			60 and more			
	\bar{x}	SD	R	\bar{x}	SD	R	\bar{x}	SD	R	test χ^2
Health aspects	4.32	1.11	1	4.46	1.07	1	4.70	0.74	1	p=0.063
Taste and smell	4.13	1.03	2	4.27	0.96	2	4.54	0.80	2	p=0.101
Environmental aspects	3.29	1.28	4	3.57	1.25	4	3.89	1.20	4	p=0.041
Advertisements	2.43	1.28	8	2.42	1.38	8	2.35	1.32	8	p=0.468
Price	2.49	1.17	7	2.56	1.29	7	2.35	1.23	7	p=0.203
Brand	3.74	1.21	3	3.80	1.29	3	4.05	1.29	3	p=0.093
Package	2.80	1.26	5	2.96	1.34	5	3.19	1.35	5	p=0.017
Incident	2.70	1.19	6	2.72	1.30	6	2.73	1.12	6	p=0.063

\bar{x} – mean value, SD – standard deviation, R - rank

claimed not to pay attention to the frequency of consumption. Depending on education (Figure 2), most respondents failed to notice the frequency of consumption, the prevailing number of them were people with higher education in process (19%). Pacholek *et al.* [1996] showed that young people with higher

education are the most frequent purchasers of ecological food in studies. Studies carried out in Danish and New Zealand markets [Squires *et al.*, 2001] indicate that socio-demographic features do not significantly impact the frequency of consumption in Denmark. According to the authors, people living

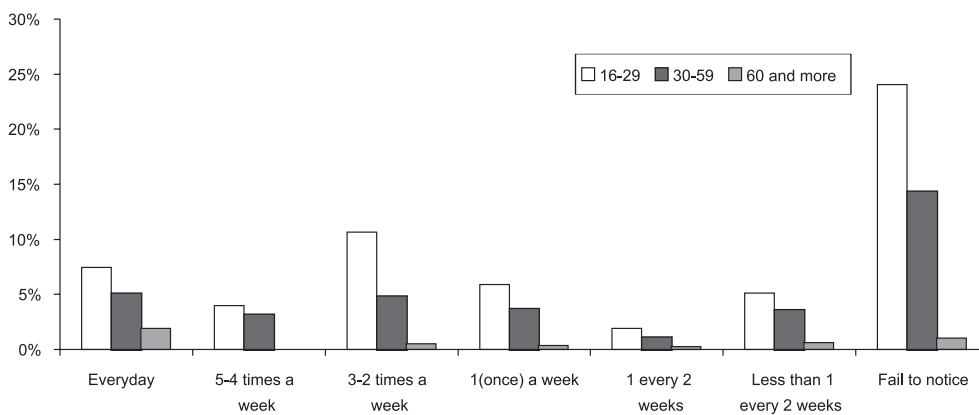


FIGURE 1. Age-dependent frequency of organic food consumption, declared by the respondents.

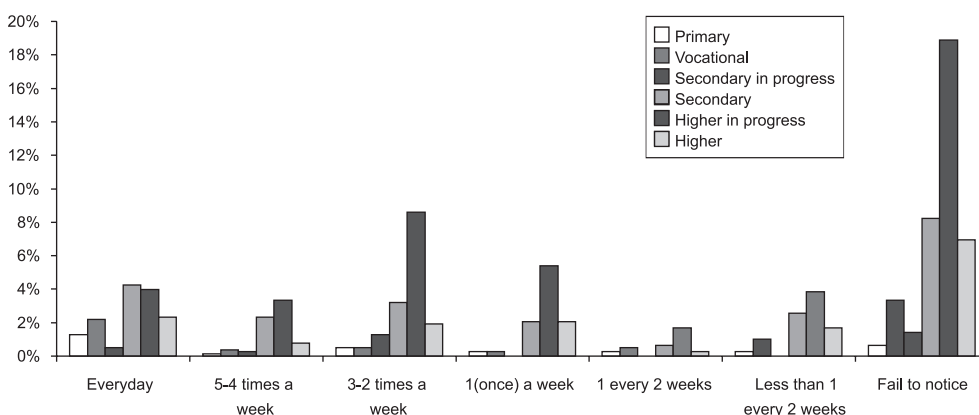


FIGURE 2. Education-dependent frequency of organic food consumption, declared by the respondents.

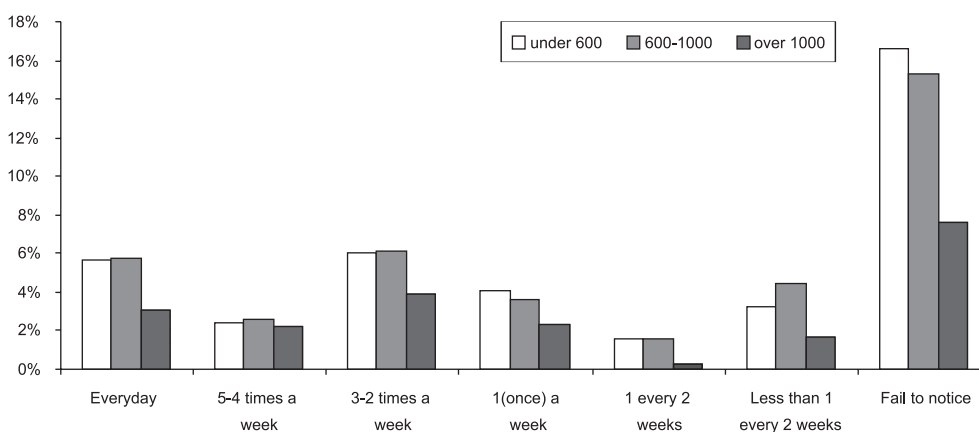


FIGURE 3. Income-dependent frequency of organic food consumption, declared by the respondents.

in the countryside or outside huge urban areas consume such products more often than people dwelling in cities. Research carried out among English consumers [Harper & Makatouni, 2002] showed that organic produce is mainly consumed by vegetarians. A lack of trust in the information provided by government and the food industry has a negative impact on the frequency of purchases. According Weatherell *et al.* [2003] English consumers dwelling in the countryside tend to buy

organic food more often, usually buying from local producers. Rimal *et al.* [2005] noted that the level of education does not always have an influence on the frequency of purchase of ecological food. The authors indicated that older people tend to buy less often than younger consumers, which can be connected with their lower income. In Italy [Gambelli *et al.*, 2004] organic food is very often consumed by people with allergies and illnesses. The prices of such products are high. This is a

reason why the main group of organic consumers are people with high income.

The relevant problem, which exists in many countries including Poland, is the narrow access to organic products. The inaccessibility is the main barrier of purchase of such products. Only Danish authors [Squires *et al.*, 2001; Millock, 2004] describe the organic market as well-developed. The Danish organic food sector is stable, supported by government and has a wide range of products and high level of consumption. In Poland it is necessarily to disseminate information on these products by educational and informative programs. EU funding as a part of the European Agriculture Guidance and Guarantee Funds program are a chance. Funds for informative and promotional actions are considered within PROW in 2007-2013. This may stimulate the organic food market.

CONCLUSIONS

Most of the examined definitions of organic food were close; however, knowledge about it is only partial. Without knowledge of the packing, it is impossible to make a proper choice. The large majority of respondents claim to be organic food consumers, but they do not pay attention to how often they purchase it. Many consumers are unaware that the food they buy as organic is, in fact, ordinary.

Generally, the factors related to the consumer such as age and gender did not affect the ranking and the importance of factors (related to product and environment) which play important role in purchasing of organic food. Care about one's health was the main choice factor.

REFERENCES

1. Aarset B., Beckmann S., Bigne E., Beveridge M., Bjørndal T., Bunting J., McDonagh P., Mariojous C., Muir J., Prothero A., Reisch L., Smith A., Tveteras R., Young J., The European consumers' understanding and perceptions of the "organic" food regime. *Brit. Food J.*, 2004, 6, 93-105.
2. Babicz-Zielińska E., Food Quality in the Aspect of Consumer Opinion. 2006, Gdynskie Wydawnictwo Naukowe, Gdańsk, p. 44 (in Polish).
3. Boltromiuk A., Demand on the organic agricultural products in Poland in comparison with the other European Union countries. *Zag. Ekon. Rol.*, 1999, 2, 40-51 (in Polish).
4. Davies A., Titterington A. J., Cochrane C., Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *Brit. Food J.*, 1995, 97, 17-23.
5. Dziedzic S., The state of the ecological self-knowledge of food consumers from the region of Podkarpackie. Material of Scientific Conference, 29-30 June 2006, Wrocław, Poland, [http://www.ke.ee.wroc.pl/konferencja/referaty/dziedzic.pdf] (in Polish).
6. Fotopoulos C., Krystallis A., Purchasing motives and profile of the Greek organic consumer: a countrywide survey. *Brit. Food J.*, 2002, 104, 730-765.
7. Gambelli D., Naspetti S., Vairo D., Why are consumers buying organic meat and milk? A qualitative study of the Italian market, 2004, [http://orgprints.org/2679/].
8. Harper G. C., Makatouni A., Consumer perception of organic food production and animal welfare. *Brit. Food J.*, 2002, 104, 287-299.
9. Kuhar A., Juvancic L., Modeling consumer preferences towards organic and integrated fruits and vegetables in Slovenia, 97th EAA Seminar, 2005, The economics and policy of diet and health, [http://www.eaae.rdg.ac.uk/Papers/3B-KuharJuvancic.pdf].
10. Lea E. Worsley T., Australians' organic food beliefs, demographics and values. *Brit. Food J.*, 2005, 107, 855-869.
11. Lisińska-Kuśnierz M., Ucherek M., Ecolabelling of packaged products. *Tow. Probl. Jak.*, 2005, 2, 23-37 (in Polish; English abstract).
12. Lohr L., Factors affecting international demand and trade in organic food products. Dept. of Agricultural & Applied Economics College of Agricultural & Environmental Sciences University of Georgia, 2001, [http://www.organicaginfo.org/record.cfm?pk_doc_id=3223&doc_num=17].
13. Millock K., Wier M., Mørch Andersen L., Consumer demand for organic foods – attitudes, values and purchasing behaviour. 13th annual EAERE Conference, Budapest, 2004, [http://orgprints.org/4754/].
14. Ozimek I., The consumers of organic food. *Zdrowa Żyw.*, 1996, 31, 13-15 (in Polish).
15. Pacholek B., Kumider J., Małecka M., The natural food = healthy food. *Zdrowa Żyw.*, 1996, 4, 6 (in Polish).
16. Radman M., Consumer consumption and perception of organic products in Croatia. *Brit. Food J.*, 2005, 7, 263-273.
17. Rimal A. P., Moon W., Balasubramanian S., Agro-biotechnology and organic food purchase in the United Kingdom. *Brit. Food J.*, 2005, 107, 84-97.
18. Squires L., Juric B., Cornwell T.B., Level of market development and intensity of organic food consumption: cross-cultural study of Danish and New Zealand consumers. *J. Consum. Mark.*, 2001, 18, 392-409.
19. Tarkiainen A., Sundqvist S., Subjective norms, attitudes and intentions of Finnish consumers in buying organic food, *Brit. Food J.*, 2005, 107, 808-822.
20. Weatherell C., Tregear A., Allinson J., In search of the concerned consumer: UK public perceptions of food, farming and buying local. *J. Rural Stud.*, 2003, 19, 33-244.
21. Żakowska-Biemans S., Factors of choosing eco-farming products and of ecological farming in light of questionnaire studies. *Rocz. Nauk, Zoot.*, 2000, 8 (suppl.), 196-201 (in Polish).
22. Żakowska-Biemans S., Gutkowska K. The Market of Organic Food in Poland and Other European Union Countries. 2003, Wydawnictwo SGGW, Warszawa, pp. 160-183 (in Polish).
23. Zychlińska J., Jamroz J., Szarek Z., Organic animal production as exemplified by the holdings from Southern Poland regions. *Wiś Jutra*, 2004, 11, 35-36 (in Polish).

ŻYWNOSĆ EKOLOGICZNA - STAN WIEDZY KONSUMENTÓW I DETERMINANTY WYBORU

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W pracy zbadano wpływ wybranych czynników (związanych z konsumentem, produktem i środowiskiem) na motywety zakupu i częstotliwość spożycia żywności ekologicznej. Badania zrealizowano na próbie 770 respondentów pochodzących z województwa warmińsko-mazurskiego. Technika badawczą był wywiad bezpośredni. Analizy statystycznej otrzymanych wyników dokonano przy użyciu programu Statistica 7.1, przy zastosowaniu testu χ^2 (na poziomie istotności $p=0,05$) i τ -Kendalla.

Respondenci poprawnie definiowali pojęcie żywności ekologicznej. Wykazano, iż w przypadku kobiet i osób z wyższym wykształceniem prasa stanowiła istotniejsze ($p<0,05$) źródło informacji o tych produktach. Głównymi determinantami wyboru żywności ekologicznej przez badane osoby były względy zdrowotne. Płeć i wiek badanych nie miały istotnego wpływu na uszeregowanie ważności czynników decydujących o wyborze produktów ekologicznych. Około 83% z ogółu badanych deklarowało, iż kupuje produkty ekologiczne, jednak większość z nich nie zwraca uwagi jak często dokonuje zakupu. Stwierdzono, że wiek i wykształcenie miały istotny wpływ na częstotliwość spożycia. Badania wykazały, iż ankietowani w niewielkim stopniu znają oznakowania produktów ekologicznych.